We claim:

1. A force sensor system for use in monitoring weight bearing at a location on a person, comprising:

a plurality of independent, non-overlapping pockets inflated with air or liquid, said pockets forming the interior of at least one flexible pouch placed at or near said location;

a plurality of tubes, wherein at least one tube allows flow of air or liquid in and out of each of the pockets to a location remote from the pouch; and

a plurality of pressure sensors remote from the pouch connected to said pockets through said tubes, wherein each pressure sensor is disposed to detect the pressure applied to at least one pocket.

2. A system as in claim 1 further comprising a plurality of valves remote from said pockets connected to said pockets through said tubes, said valves open to allow inflation and deflation of said pockets and closing to allow closed system operation of said pockets.

3. A system as in claim 1, wherein said at least one flexible pouch comprises at least one of a flexible insole worn inside a shoe, a flexible wrap worn around a knee, and a flexible wrap worn around a palm.

4. A system as in claim 1, wherein said at least one flexible pouch comprises two outer layers of fabric sheets, said outer layers of sheets being welded together in a welding pattern using a sealing agent.

5. A system as in claim 4, wherein said outer layers of fabric sheets comprise a fabric base and a polyurethane coating.

6. A system as in claim 4, wherein said outer layers of fabric sheets comprise a fabric base and a polyvinylchloride coating.

7. A system as in claim 4, wherein said welding pattern comprises:
a weld around the perimeter of each pocket; and
a weld of concentric circles of elliptical welds originating from the center of each pocket.

8. A system as in claim 4, wherein said welding pattern comprises:
a weld around the perimeter of each pocket; and
a weld of parallel rows of elliptical welds.

9. A system as in claim 4, wherein said sealing agent comprises one of an RF - weld and an ultrasonic seal.

10. A system as in claim 3, wherein the flexible insole contains a first inflatable pocket in the heel region of the insole and a second inflatable pocket in the forefoot region of the insole.

11. A system as in claim 3, wherein the flexible wrap worn around a knee comprises two adhesive strips for tightly securing the wrap on the anterior aspect of the knee joint.

12. A system as in claim 3, wherein the flexible wrap worn around a palm comprises two straps and a latch for tightly securing the wrap around the thenar and the hypothenar.

13. A system as in claim 1, wherein said pockets comprise at least two layers of translucent film.

14. A system as in claim 1, wherein each pressure sensor converts received pressure signals to electrical output signals representative of the weight bearing on the location.

15. A system as in claim 14, wherein the electrical output signals are input signals to an attached control unit of one of a weight bearing biofeedback system and an electrical stimulation system.

16. A system as in claim 15, wherein said weight bearing biofeedback system generates feedback to the location in response to the input signals.

17. A system as in claim 15, wherein said electrical stimulation system uses said input signals to identify specific stages of a gait cycle of the foot and to activate an electronic orthosis.

18. A foot stimulation system for use in control of an electronic orthosis comprising:

a flexible insole worn inside a shoe containing at least two inflatable pockets positioned in the heel region and the forefoot region, respectively, said pockets forming the interior of said flexible insole and being inflated with air or liquid;

at least two tubes allowing flow of air or liquid in and out of said respective pockets to a location remote from said insole; and

at least two pressure sensors remote from said insole connected to said respective pockets through said respective tubes, said pressure sensors disposed so as to detect the pressure applied to said inflatable pockets and converting pressure signals to electrical output signals.

19. A system as in claim 18, further comprising at least two valves remote from said insole connected to said inflatable pockets through said tubes, said valves opening to

allow inflation and deflation of said inflatable pockets and closing to allow closed system operation of said inflatable pockets.

20. A system as in claim 18, wherein the inflatable pockets include extensions connecting the insole and the tubes.

21. A system as in claim 18, further comprising:

a stimulator that delivers stimulation to a foot; and

a controller that receives said electrical output signals from said pressure sensors as input signals, said controller activating said stimulator to deliver stimulation to a first muscle group in response to input signals from the heel pressure sensor and activating said stimulator to deliver stimulation to a second muscle group in response to input signals from the forefoot pressure sensor.

22. A system as in claim 21, wherein the degree of said stimulation by said stimulator is proportional to the pressure measurements obtained by said pressure sensors.

23. A system as in claim 21, wherein the degree of said stimulation by said stimulator is a constant preselected by the user.

24. A system as in claim 21, wherein said first muscle group is the anterior muscles of the tibia.

25. A system as in claim 21, wherein said second muscle group is the posterior muscles of the tibia.

26. A palm force sensor for use in a weight bearing biofeedback rehabilitation system comprising:

at least one flexible wrap worn around a hand comprising an inflatable pocket positioned on the palm, said pocket forming the interior of said flexible wrap and being inflated with air or liquid;

at least one tube allowing flow of air or liquid in and out of said pocket to a location remote from said wrap; and

at least one pressure sensor remote from said wrap connected to said pocket through said tube, said pressure sensor disposed so as to detect the pressure applied to said inflatable pocket, and converting pressure signals to electrical output signals.

27. A system as in claim 26 further comprising at least one valve remote from said wrap connected to said inflatable pocket through said tube, said valve opening to allow inflation and deflation of said inflatable pocket and closing to allow closed system operation of said inflatable pocket.

28. A system as in claim 26 further comprising a controller of a weight bearing biofeedback system that receives said electrical output signals from said pressure sensors as input signals, said controller generating feedback based to the palm in response to the input signals.

29. A system as in claim 26 wherein said wrap further comprises a band for tightly securing the wrap around the thenar and the hypothenar.

30. A knee stimulation system for use in a weight bearing biofeedback rehabilitation system comprising:

at least one flexible wrap worn around a knee containing an inflatable pocket positioned on the knee, said pocket forming the interior of said flexible wrap and being inflated with air or liquid;

at least one tube allowing flow of air or liquid in and out of said pocket to a location remote from said wrap; and

at least one pressure sensor remote from said wrap connected to said pocket through said tube, said pressure sensor disposed so as to detect the pressure applied to said inflatable pocket, and converting pressure signals to electrical output signals.

31. A system as in claim 30 further comprising at least one valve remote from said wrap connected to said inflatable pocket through said tube, said valve opening to allow inflation and deflation of said inflatable pocket and closing to allow closed system operation of said inflatable pocket.

32. A system as in claim 30 further comprising a controller of a weight bearing biofeedback system that receives said electrical output signals from said pressure sensors as input signals, said controller generating feedback based to the knee in response to the input signals.

33. A system as in claim 30, wherein said flexible wrap comprises two bands for tightly securing the wrap on the anterior aspect of the knee joint.

34. A method for activating the stimulation of different muscle groups in response to force measurements from different regions of the foot, comprising the steps of:

inflating at least two pockets with air or liquid, said pockets forming the interior of a flexible insole to be worn inside a shoe, said pockets being respectively located in the heel and forefoot region of the foot;

detecting the force applied to said pockets by measuring the air or liquid pressure in a location remote from said insole;

converting said pressure measurements to electrical output signals;

activating the stimulation of a first muscle group in response to electrical output signals from the heel region; and

activating the stimulation of a second muscle group in response to electrical output signals from the forefoot region.

35. A method as in claim 34, wherein said first muscle group is the anterior muscles of the tibia.

36. A method as in claim 34, wherein said second muscle group is the posterior muscles of the tibia.

37. A method as in claim 34, wherein the degree of said stimulation of said first and second muscle groups is proportional to the force applied to corresponding pockets.

38. A method as in claim 34, wherein the degree of said stimulation of said first and second muscle groups is a constant preselected by the user.

39. A method for generating biofeedback in response to force measurements, comprising the steps of:

inflating a plurality of pockets with air or liquid, said pockets forming the interior of at least one flexible pouch;

detecting the force applied to said pockets by measuring the air or liquid pressure in a location remote from the pouch;

converting said pressure measurements to electrical output signals; and

activating the stimulation of a plurality of muscle groups in response to electrical output signals, whereby each muscle group is stimulated in response to electrical output signals corresponding to pressure measurements of respective ones of said pockets.

40. A method as in claim 39, wherein said flexible pouch comprises at least one of a flexible insole worn inside a shoe, a flexible wrap worn around a palm, and a flexible wrap worn round a knee.